CDPK3

PDB:3HZT

Revision

Revision Type:created
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Entry Clone Accession:541.m00134
Entry Clone Source:
SGC Clone Accession:541.m00134:L72-H537:B4
Tag:N-terminal tag: mhhhhhhssgrenlyfqg
Host:BL21(DE3)R3pACYC-LIC+LamP-phosphatase

Construct

Prelude:
Sequence:

LSDRYQRVKKLGSGAYGEVLLCKDKLTGAERAIKIIKKSSVTTTSNSGALLDEVAVLKQLDHPNIMKLYEFFEDKRNYYLVMEVYRG
GELFDEIILRQKFSEVDAAVIMKQVLSGTTYLHKHNIVHRDLKPENLLLESKSRDALIKIVDFGLSAHFEVGGKMKERLGTAYYIAP
EVLRKKYDEKCDVWSCGVILYILLCGYPPFGGQTDQEILKRVEKGKFSFDPPDWTQVSDEAKQLVKLMLTYEPSKRISAEEALNHPW
IVKFCSQKHTDVGKHALTGALGNMKKFQSSQKLAQAAMLFMGSKLTTLEETKELTQIFRQLDNNGDGQLDRKELIEGYRKLMQWKGD
TVSDLDSSQIEAEVDHILQSVDFDRNGYIEYSEFVTVCMDKQLLLSRERLLAAFQQFDSDGSGKITNEELGRLFGVTEVDDETWHQV
LQECDKNNDGEVDFEEFVEMMQKICDVKVKH

Vector:p15-mhl

Growth

Medium:TB
Antibiotics:
Procedure:541.m00134:L72-H537:B4 was expressed in *E. coli* BL21(DE3)R3pACYC-LIC+LamP-phosphatase cells in Terrific Broth (TB) in the presence of ampicillin/chloramphenicol (50 microg/mL and 25 microg/mL respectively). A single colony was inoculated into 10 mL of LB with of ampicillin/chloramphenicol (50 microg/mL and 25 microg/mL respectively) in a 50 mL Falcon tube and incubated with shaking at 250 rpm overnight at 37 degC. The culture was transferred into 50 mL of TB with 50 microg/mL ampicillin in a 250 mL shaking flask and incubated at 37 degC for 3 hours. Then the culture was transfered into 1.8 L of TB with 50 microg/mL kanamycin and 0.3 mL of antifoam (Sigma) in a 2 L bottle and cultured using the LEX system to an OD 600 of ~5, cooled to 15 degC, and induced with 0.5 mM isopropyl-1-thio-D-galactopyranoside (IPTG) overnight at 15 degC.

Purification

Procedure

STEP1:The cleared lysate was loaded onto a column prepacked with 10 g DE52 (Whatman) anion exchange resin (previously activated with 2.5 M NaCl and equilibrated with Binding Buffer); and subsequently onto a 3 mL Ni-NTA (Qiagen) column pre-equilibrated with Binding Buffer at approximately 1 - 1.5 mL/min. The volume of the Ni-NTA resin was pre-determined by the predicted protein yield from test expression analysis. After the lysate was loaded, the DE52 was further washed with 20 mL of Binding Buffer. The Ni-NTA column was then washed with 200 mL of Wash Buffer at 2 - 2.5 mL/min. After washing, the protein was eluted with 15 mL of Elution Buffer. TCEP was added to 1 mM, and MgCl2 to 1mM.

STEP2:(Cut His Tag) Added TEV (with activity 1:50 and concentration of 12mg/ml) to the protein and dialysis in 10mM HEPES, 500mM NACL, 5mM Imidazole, and 5mM DTT overnight. The day after running mass spectroscopy to make sure His Tag completely cut and then pass through Ni-NTA column, and filterated with syringe driven filter unite(0.22um) for running Gel filtration.

STEP3: The sample was loaded onto a Sephadex S200 26/60 gel filtration column pre-equilibrated with 10 mM HEPES, pH 7.5 and 500 mM NaCl, 5mMDTT. The collected fractions corresponding to the correct eluted protein peak were concentrated using a 15 mL Amicon Ultra centrifugal filter device (Millipore). The protein sample identity were evalulated by mass spectroscopy. The concentrated sample (20 mg/ml) was stored at -80 degC.

Extraction

Procedure
The culture was harvested by centrifugation. Pellets from 4 L of culture were resuspended to approximately 40 mL/L of cell culture in Binding Buffer with the addition of protease inhibitors (1 mM benzamidine and 1 mM phenylmethyl sulfonyl fluoride (PMSF)). Resuspended pellets stored at -80 degC were thawed overnight at 4 degC on the day before purification. Prior to mechanical lysis, each pellet from 1 L of culture was pretreated with 0.5 % CHAPS and 500 units of benzonase for 30 minutes at room temperature. Cells were mechanically lysed with a microfluidizer (Microfluidizer Processor, M-110EH) at approximately 18000 psi; and the cell lysate was centrifuged using a Beckman JA-25.50 rotor at ~75000 x g (24000 rpms) for 20 minutes at 10 degC.
Concentration:
Ligand
MassSpec:
Crystallization: The protein was crystallized at 20 degC in 19% w/v PEG 3350, 0.2 M KF using the Hanging drop vapor diffusion method. 3mM SU11652 (Calbiochem) added to protein before setting up plate.
NMR Spectroscopy:
Data Collection:
Data Processing: